

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in prior office action.

Claim Rejections - 35 USC § 103

1. Claims 145-171 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (PGPUB 2004/0072049), and further in view of Yonetsu et al (USPAT 6506513) and Yamada (USPAT 5364711).

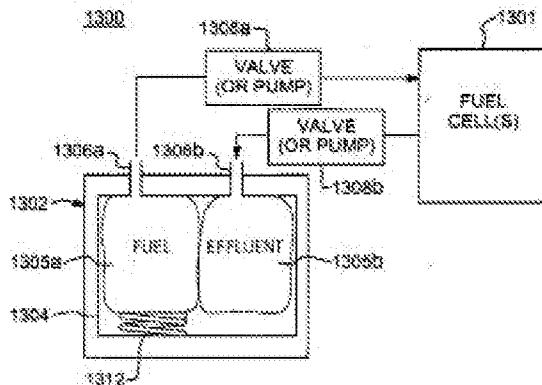


FIG. 13

Claim 145, 151, 157, 165: Becerra teaches a fuel cell in which a plurality of unit cells which comprise an electrolyte layer between a fuel electrode (anode) and air electrode (cathode) [Fig 1; p 38]. The system comprises a detachable fuel container system that comprises a fuel storage bladder (1305a) and an effluent (1305b: unused fuel, water, other byproducts of the fuel cell system) bladder in one container, wherein the fuel container is connected to the fuel electrode [Abstract, Figure 13]. The fuel container is connected to a plurality of fuel cells (1308a) [Figure 13]. The used fuel storing tank (1305b) is hermetically closed except the part connected to valve/pump

(1308b) which is contains the discharge from the fuel cell [Figure 13]. The valves would be open in order to allow the flow of fuel and byproduct. The "space" exists between the used fuel storing tank (effluent) and the liquid fuel storing tank along the flow direction of the fuel path wherein the unit cells and fuel supply members exist in the space (1308a → 1301 → 1308b).

Becerra fails to teach a second (another) fuel supply member which is connected with at least one of said plural unit cells. This duplication of parts would have been obvious to one of ordinary skill in the art. MPEP 2144.04 VI. B. Applicant has not shown criticality of a second fuel supply member which would obviate the structure over the prior art of record.

Becerra fails to teach a feed mechanism comprising capillary materials.

The storage tank of Becerra when initialized is obviously not in contact in a manner of some embodiments of the instant application due to no effluent material existing in the effluent bladder. In the assembly of the structure where the fuel cell has not be used, the full fuel bladder would not be in contact with the effluent bladder as would be obvious to one of ordinary skill in the art. The current applicant include functional, non-structural limitation pertaining to the usage of the cell where the bladders are never in contact with each other. In the case where the cell is never operated, the bladders will never be in contact with each other. The applicant can not receive method limitation weight in structure claims. The prior art of record is capable of operating in substantially the same way as claimed.

MPEP 2144.04 IV C. Rearrangement of parts obviates the separation of effluent and fuel. Although Becerra teaches thermal motivation for combining parts, one of ordinary skill in the art would have found it obvious to rearrange the separate entities that are detachable.

FIG. 22

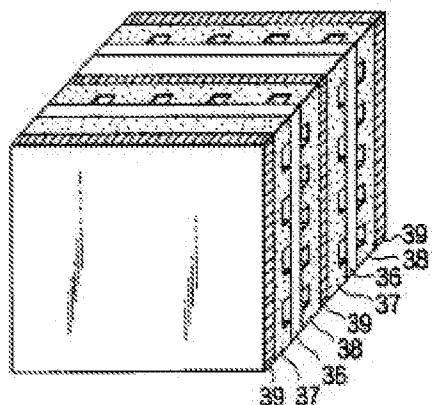
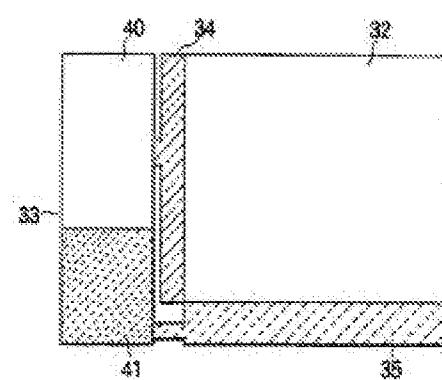


FIG. 23



Yonetsu teaches a detachable fuel tank that uses capillary action to draw fuel from the tank to the unit cell. A fuel tank is attached to this fuel cell and utilizes capillary action to introduce fuel into the unit cell [Abstract; Col 4 Ln 26-65]. Figure 14 shows a plurality of unit cells (2) in the system. Porous materials or fine tubes (fibers) are taught to be used in order to achieve this force [Col 4 Ln 5-65]. Yonetsu teaches a feed element that is penetrating into the fuel tank and deposits the fuel at the electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fuel flow path of Becerra with a capillary removable mechanism as taught by Yonetsu in order to have a system that has a highly stable feed of liquid fuel to the fuel

cell in small devices based regardless of orientation due to the use of capillary forces [Col 2 Ln 33-40].

Yamada teaches a cartridge (33) is depicted in Figure 23 to include a fuel storage area (40) and water-storage (used fuel) area (41) wherein the fuel transfers from the cartridge to the cell via a fuel diffusion chamber (34) and from the cell to the water-storage area via a water-recovery chamber (35). The capillary materials are taught to be porous materials or fibers [Col 18 Ln34-51] wherein the fibers create a porous material and therefore read on a porous material and fiber material. The fuel diffusion chamber and water-recovery chamber use organic or inorganic fiber wicks to move the fuel/water by capillary motion through the cell [Col 37 Ln 50-Col 38 Ln 54]. Yamada teaches a space between the used fuel storing tank and the liquid fuel storing tank (electrode plate regions) comprising the capillary force material [Fig 22-23]. Yamada also teaches the collector body [Figure 23] wherein it has the same function as claimed. Yamada is relied upon because Yonetsu teaches expelling used fuel from the fuel cell. Yamada enables the mechanism of capillary force for drawing fuel from a tank and sending it back to a waste tank, thus enabling one of ordinary skill in the art to modify Becerra to incorporate capillary force. It would have been obvious for one of ordinary skill in the art to modify Becerra with Yamada because Yamada teaches making a fuel cell smaller by utilizing this natural driving force instead of mechanical [Col 3 Ln 5-Col 4 Ln 14].

Claim 146-147, 153, 158-159, 162, 167, 169: Yamada teaches a water-retaining wick (41) having a smaller average pore diameter than the water-recovery wick (35)

[Col 38 Ln 25-28]. It is taught that the smaller the average pore diameter, the increase in capillary force [Col 39 Ln 1-15]. It is also taught to have the force increase from fuel reservoir area (40) to water-recovery area (41) [Col 39 Ln 29-38]. The feed comprises the same elements of a fuel supplying member and therefore the rejection can be made for the listed claims.

Claim 148, 154, 160, 168: Becerra teaches a detachable tank unit [Abstract Figure 13].

Claim 149: Becerra teaches a valve or pump system attached to the used liquid fuel storing tank that can be open or closed [Figure 13]. The limitation of the used fuel occlusion body is not a positively recited structure claim limitation. The system of Becerra is able to perform the limitation of the used fuel occlusion body in light of Yamada.

Claim 150, 156, 164, 171: Becerra teaches a fuel of methanol [Paragraph 37].

Claim 152, 166: The applicant has claimed the product by how the product was made. Thus, claims are product-by-process claims. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply a structure having a collector body. The reference suggests such a product.

Claim 155, 163, 170: Becerra teaches a valve [Figure 13] wherein it can be open or closed.

Claim 161: The fuel occlusion body being an element capillary force is taught to be a fin shape by Yamada [Figure 23].

Claim 161: The fuel occlusion body being an element capillary force is taught to be a fin shape by Yonetsu [Figure 13].

Claim 161: Change of shape and size is not patentably distinct when it would have been within the ability of one of ordinary skill in the art MPEP 2144.04.

Response to Arguments

Arguments pertaining to unreacted fuel and heat are not persuasive as the structure claimed is taught by the prior art. Applicant is encouraged to positively recite structure limitations that achieve desired function that differentiate the instant application from the prior art. MPEP 2114

With regard to arguments pertaining to the limitation “another fuel supplying member”, this feature is addressed in the grounds of rejection above.

3. Yamada is used to modify the “space” between the fuel supply and the used fuel storage tanks (1308a → 1301 → 1308b). This area is modified to include the capillary force material in order to operate a fuel cell in any orientation. The “Feed” is the line and valve that connects the fuel cell with the storage tanks and thusly the examiner interprets the prior art to read on the instant claims as presented. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973); *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); MPEP 2145.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-277-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/
Examiner, Art Unit 1729

/Robert Hodge/
Primary Examiner, Art Unit 1729